

Remarks

Status of the Claims

Claims 21, 24-26, 29-35, and 37-41 are pending and ready for further action on the merits.

Claims 21, 24-26, 31, 32, 37, 38, 39, and 41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over EP Publication No EP 0418722 to Fiorenzo et al. ("Fiorenzo") in view of the combination of U.S. Patent No. 5,200,666 to Walter et al. ("Walter"), U.S. Patent No. 5,467,791 to Kato et al. ("Kato"), and Atomic Energy Control Board, "Fundamentals of Power Reactors" ("AECB"). Claim 29 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Fiorenzo in view of the combination of Walter, Kato, and U.S. Patent No. 5,812,621 to Takeda et al. ("Takeda"). Claims 30, 33, and 40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fiorenzo in combination with Kato and AECB and further in view of U.S. Patent No. 5,377,237 to Richardson et al. ("Richardson"). Claims 34 and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Fiorenzo, Kato, AECB, and Richardson, and further in view of U.S. Patent No. 4,320,528 to Scharton et al. ("Scharton").

Applicant respectfully requests reconsideration of the present application and the allowance of all claims now presented.

**Rejections Relying Upon Fiorenzo, Kato, and Walter: Previously
Considered and Distinguished at Length**

Applicant expresses its displeasure in the reintroduction of rejections over prior art combinations that have been addressed and rebutted on multiple occasions during the course of examination, specifically regarding Fiorenzo, Kato, and Walter (both individually and in combination with one another). It appears that the present Office Action is ignoring the large volume of arguments and statements made by the Examiner, the Applicant, and declarant¹ during the course of examination.

Applicant asserts that the arguments below, as well as the arguments found in the Response dated May 15, 2007; the Response dated April 27, 2006; the Pre-appeal Conference Brief dated January 30, 2006; the Response dated September 25, 2005; and the Response dated January 21, 2005, as well as elsewhere throughout the prosecution history, clearly rebut the Examiner's present arguments and rejections.

For example, Applicant contends that the arguments presented prior to the December 26, 2006 Office Action (and similar to those presented below) were persuasive and ultimately resulted in the withdrawal of all rejections relying upon Fiorenzo (whether used as an anticipatory reference or an obviousness reference). Within the Office Action dated December 26, 2006

¹ See declaration of David Gross dated January 15, 2005 filed with the Response to Office Action dated January 21, 2005.

(replacing the Office Action dated July 7, 2006), Fiorenzo was not even cited in making any rejections therein.

The Examiner has not presented any new reasoning or arguments to cure the deficiencies of the past rejections. Applicant acknowledges the newly cited AECB reference but asserts that the AECB reference does not cure the deficiencies of the combination of Fiorenzo, Kato, and Walter as discussed below (as well as previously during examination). The Examiner has only relied upon AECB for a teaching of fuel assemblies for a CANDU reactor.

Applicant is perplexed with the reintroduction of previously considered references (and combinations) and previously withdrawn rejections that were dealt with extensively one to four years ago that were effectively resolved. Further, the present listing of claims does not include claim amendments that broadened the scope of the claims.

This piecemeal examination has resulted in a greater delay in obtaining an issued patent for the Applicant, along with increased costs for the Applicant in prosecuting the application. Applicant asserts that this type of piecemeal examination should be avoided. See MPEP § 707.07(g).

Response to Examiner's Arguments Regarding Interview Summary

In the Office Action on page 2, ¶ 2, the Examiner states that one of Applicant's statements within the Interview Summary describing the interview

of July 1, 2008 does not completely reflect the discussion of the prior art. The Examiner characterizes the discussion during the interview as "the claims can be rejected not only on the basis of a single reference."

Regarding this point, Applicant stated, "[d]uring further discussion of the prior art, the Examiner agreed that a single reference that teaches all of the elements as claimed has not been cited." See Response dated July 21, 2008, page 13. Applicant believes that this is an accurate statement. For clarity purposes, Applicant further describes the discussion as a single prior art reference has not been cited that teaches all of the elements within a claim. Applicant believes that both statements are consistent with the discussion during the July 1, 2008 interview.

Response to Examiner's Arguments Regarding Secondary Consideration

Applicant first asserts that a strong *prima facie* case of obviousness has not been made. Instead, an obviousness rejection relying upon a combination of a group of references that have been both individually and in combination distinguished does not arise to a strong *prima facie* case of obviousness. As discussed below (as well as during previous examination), the Examiner has failed to show each and every limitation within the claims. The present combination of references does not make a *prima facie* case for obvious at all.

The primary reference, Fiorenzo, as well as the secondary reference Kato, both in combination with Walter have been distinguished by Applicant's previous claim amendments and arguments. It is unclear how the reintroduction of generally the same combination of references can be viewed as a strong *prima facie* case for obviousness.

As presented below (and done throughout the course of examination), an obviousness rejection based upon the Fiorenzo or Kato reference, individually or in combination, is not a strong *prima facie* case of obviousness. Instead, such a combination is a failure even to make a *prima facie* case for obviousness.

Additionally, with respect to the Examiner's third point that "cleaning an assembled fuel assembly by an ultrasonic device is old art" citing Kato as an example, this point is a oversimplification of the presently pending claims. Applicant is not claiming the entire field of cleaning a fuel assembly with ultrasonic devices, but instead claiming the novel and non-obvious apparatuses as recited in the present listing of claims. Further as discussed below and previously during examination, Kato does not teach the presently claimed apparatus.

Even if a *prima facie* case of obvious had been made (which Applicant does not concede), the Examiner has not given sufficient consideration or weight to the evidence of a long-felt, but unmet, need in the nuclear industry to be able to clean an irradiated fuel assembly having multiple fuel rods without first having to take the time, effort, and precautions necessary to disassemble

the assembly. Further, the Examiner has even previously admitted that such a long-felt, but unmet, need existed as discussed during the interview of July 1, 2008, and presented in the Interview Summary on July 21, 2008.

Claim Rejections

35 U.S.C. 103(a) Rejections

Claims 21, 24-26, 31, 32, 37, 38, 39, and 41

The rejection of claims 21, 24-26, 31, 32, 37, 38, 39, and 41 under 35 U.S.C. § 103(a) as being unpatentable over Fiorenzo in view of the combination of Walter, Kato, and AECB is respectfully traversed.

Applicant asserts that a *prima facie* case of obvious has not been established as all of the claimed limitations have not been taught or suggested by the prior art. See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Further, one of ordinary skill in the art would not be motivated or taught by the combination of cited references to arrive at the presently claimed apparatuses.

Independent claims 21, 31, 34, and 37 each include a limitation that the apparatus comprises a plurality of ultrasonic omnidirectional transducers each comprising a rod "configured to emanate omnidirectional ultrasonic energy waves."

Similar to the arguments that have been previously presented and were persuasive, the teachings of Fiorenzo teach the use of planar transducers and does not teach or suggest the use of ultrasonic transducers that each emanate omnidirectional energy waves. As described previously during examination and

an interview on March 7, 2006,² Fiorenzo teaches one of ordinary skill in the art the use of planar transducers. Fiorenzo describes a process for total decontamination or decommissioning of heat exchanger tubes. The process of Fiorenzo is designed to apply the maximum amount of ultrasonic energy to the heat exchanger tubes.³ Also, Fiorenzo teaches the placement of transducers on the outside of the wall of an outer tank that holds within it a second inner tank that in turn holds the heat exchanger tubes to be cleaned. The transducers on the outer side walls and the bottom of the outer tank must convey ultrasonic energy in one direction only: toward the inner tank where the heat exchanger tubes are located.

In order to provide the maximum and most efficient application of ultrasonic energy from the outside wall of the outer tank to the inner tank requires the use of transducers that emanate their energy in a single direction and not in multiple directions. The use of omnidirectional transducers in the apparatus taught by Fiorenzo would be extremely inefficient, reducing the maximum cleaning that Fiorenzo describes as beneficial, and would cause a failure of the direction of ultrasonic energy toward the heat exchanger tubes to be cleaned.

Further, one of ordinary skill in the art would not be motivated to modify the planar transducers of the device in Fiorenzo with those taught by Walter. As discussed above, Fiorenzo needs transducers that transmit energy in a single direction: toward the inner tank. The use of transducers taught by Walter would

² See Response to Office Action dated April 27, 2006 for a summary of this interview.

³ Applicant asserts that Fiorenzo describes processes and devices useful for cleaning of heat exchanger tubes at the end of their life. The cleaned heat exchanger tubes of Fiorenzo are not re-used and are permanently discarded.

result in inefficient use of the transducer energy since not all of the transducer energy would be directed toward the inner tank. Therefore, one of ordinary skill in the art would not be motivated to combine these references or have an expectation of success in their combination. Moreover, to modify Fiorenzo by replacing the planar transducers with omnidirectional transducers would modify the device of Fiorenzo unsatisfactory for its intended purpose. See MPEP 2143.01.V. (citing *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984)). Thus, to combine these references would rely upon the impermissible use of hindsight to result in the presently claimed apparatuses.

Further, Kato does not describe the use of omnidirectional transducers. The description and teachings of Kato are limited to planar transducers. See Response to Office Action dated January 19, 2005 and accompanying declaration of David Gross. AECB describes fuel assemblies for a CANDU reactor. None of these references can be used in combination with Fiorenzo to render the presently claimed apparatus as obvious.

Thus, for at least these reasons, the combination of Fiorenzo, Kato, Walter, and AECB fail to render the independent claims 21, 31, and 37 as unpatentable—now, nor as previously considered during examination. As claims 24-26, 32, 38, 39, and 41 depend from and further limit claims 21, 31, and 37, claims 24-26, 32, 38, 39, and 41 are also patentable over the combination of Fiorenzo, Kato, Walter, and AECB.

Claim 29

The rejection of claim 29 under 35 U.S.C. § 103(a) as being unpatentable over Fiorenzo in view of the combination of Walter, Kato, and Takeda is respectfully traversed.

As presented above, Fiorenzo does not teach or suggest an ultrasonic omnidirectional transducer that emanates omnidirectional energy waves as recited in claim 21 from which 29 depends. Neither Kato, Walter, nor Takeda supply this missing teaching. For at least these reasons, Applicants request withdrawal of this rejection.

Claims 30, 33, and 40

The rejection of claims 30, 33, and 40 under 35 U.S.C. § 103(a) as being unpatentable over Fiorenzo in with Kato and AECB , as applied to claims 21,24-26, 31, 37, 38, 39, and 41, and further in view of Richardson is respectfully traversed.

As presented above, Fiorenzo does not teach or suggest an ultrasonic omnidirectional transducer that emanates omnidirectional energy waves as recited in claims 21, 31, and 37 from which 30, 33, and 40 depend. Neither Kato, AECB, nor Richardson supply this missing teaching. Applicants request withdrawal of this rejection.

Claims 34 and 35

The rejection of claims 34 and 35 under 35 U.S.C. § 103(a) as being unpatentable over Fiorenzo, Kato, AECB, and Richardson and further in view of Scharton is respectfully traversed.

Again, as presented above, Fiorenzo does not teach or suggest an ultrasonic omnidirectional transducer that emanates omnidirectional energy waves as recited in claim 34. Neither Kato, AECB, Richardson, nor Scharton supply this missing teaching.

It is unclear what the Examiner relies upon as teaching an apparatus comprising a plurality of ultrasonic omnidirectional transducers positioned adjacent to a first side, a second side, a third side, and a fourth side of an assembled irradiated nuclear fuel assembly. Applicant asserts that the Examiner has failed to show all the limitations as included within claim 34 and thus failed to make a *prima facie* case of obviousness.

Further, the Examiner states that it would be obvious to move the transducers in Fiorenzo from the outside wall of the outer tank (5B) to inside the inner tank based upon the teaching of Scharton. However, Scharton teaches the placement of the transducers on either the inside or outside of a single tank containing the heat exchangers to be cleaned.⁴ The teaching of Scharton, at best, would only result in placing the transducers of Fiorenzo on the inside wall of the outer tank (5B) and not adjacent to any given wall of a nuclear fuel assembly. There is no teaching or suggestion provided to motivate one of skill in the art to move the transducers of Fiorenzo to the inside wall of the inner tank.

Additionally, the Examiner states that to produce homogenous power density recited in Fiorenzo it would be inherent to have transducers evenly spaced from each other around the periphery of the tank. However, there is no technical support given for the contention that a homogenous power density will result in the apparatus of Fiorenzo if the transducers are evenly spaced. Further, to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities and possibilities. The mere fact

⁴ Scharton does not address the cleaning of nuclear fuel assemblies. One of ordinary skill in the art would not rely upon the description of Scharton to arrive at the presently claimed invention.

that a certain thing may result from a given set of circumstances is not sufficient.” See *In re Robertson*, 169 F.3d 743, 49 USPQ2d 1949 (Fed. Cir. 1999); MPEP § 2112.V.. The Office Action has not provided sufficient extrinsic evidence to make clear that the missing descriptive matter of an apparatus comprising a plurality of ultrasonic omnidirectional transducers positioned adjacent to a first side, a second side, a third side, and a fourth side of an assembled irradiated nuclear fuel assembly is necessarily present in the combination of Fiorenzo, Kato, AECB, and Richardson and further in view of Scharton.

Thus, for at least these reasons, Applicants request withdrawal of the rejection of claims 34 and 35.

Dependent Claims

In responding to the claim rejections above, Applicant submits that the dependent claims are patentable based on their dependency from independent claims, which Applicant has shown to be patentable. Thus, in many instances, Applicant has not provided separate remarks specifically directed to the Examiner's grounds for rejecting the dependent claims. Applicant's failure to comment on or otherwise traverse the Examiner's rejection of the dependent claims should not be viewed as agreement, on the part of the Applicant, with the Examiner's grounds for rejection.

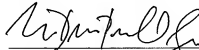
Conclusion

With the above amendments and remarks, Applicant believes that all objections and/or rejections have been obviated. Thus, each of the claims remaining in the application is in condition for immediate allowance. A passage of the instant claimed invention to allowance is earnestly solicited.

Applicant believes that no additional fee, is necessary; however, should a fee be deemed to be necessary, the Commissioner is hereby authorized to charge any fees required by this action or any future action to Deposit Account No. 16-1435.

Should the Examiner have any questions relating to the instant application, the Examiner is invited to telephone the undersigned at (336) 607-7347 or Bret T. Winterle (Reg. No. 54,546) at (336) 607-7405 to discuss any matter relating to this application.

Respectfully submitted,



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